

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for recording a bar code which consists of a plurality of parallel lines of varying thickness, ~~characterized by the steps of~~ comprising:

a) capturing, by means of a reading device, a sequence of two-dimensional images, the sequence including a subset of images, each image of the subset including at least a portion of the bar code during moving of the reading device across the same;

b) detecting edges of the bar code in each image of the subset of images;

c) determining, from the detected edges of each image of the subset of images, possible displacements of the detected edges in relation to the detected edges of at least one other image of the subset of images;

d) determining the most probable sequence of displacements of each image of the subset of images in relation to at least one other image of the subset of images for the subset of images; and

e) reconstructing bar code data by means of said sequence of images and said most probable sequence of displacements.

2. (Previously Presented) A method for recording a bar code as claimed in claim 1, in which in said step b) the edges are detected starting from the darkness level in pixels in a band over each

image, said band being essentially perpendicular to the direction of extension of the lines of the bar code.

3. (Previously Presented) A method for recording a bar code as claimed in claim 2, in which step b) comprises the following steps:

b1) generating, for at least a subset of the images which represent parts of the bar code, a histogram corresponding to the darkness level in said pixels along said band; and

b2) differentiating said histogram so that a sequence of edge coordinates is provided, which describe where along said band in the image the edges of the lines of the bar code are located.

4. (Original) A method for recording a bar code as claimed in claim 3, in which differentiated histograms are generated for a plurality of bands extending over an image at different angles, and in which the band whose differentiated histograms have the highest peaks is selected as the band which is essentially perpendicular to the direction of extension of the lines of the bar code.

5. (Original) A method for recording a bar code as claimed in claim 4, in which differentiated histograms are generated for more bands in the first image of the image sequence than in subsequent images.

6. (Previously Presented) A method for recording a bar code as claimed in claim 3, in which an edge coordinate is determined more accurately by maximizing an approximating function running through points which form a corresponding peak in said differentiated histograms.

7. (Original) A method for recording a bar code as claimed in claim 1, in which in step c) possible displacements are determined by assuming such a displacement that two edge coordinates correspond to each other and determining whether the remaining edge coordinates correspond to each other.

8. (Original) A method for recording a bar code as claimed in claim 1, in which in step d) said most probable sequence of displacements is determined with a criterion based on low acceleration of the reading device.

9. (Original) A method for recording a bar code as claimed in claim 1, in which in step d) for the images in which edges have been detected, error functions are determined for at least a subset of the conceivable displacements relative to displacements of a preceding image.

10. (Currently Amended) A method for recording a bar code which consists of a plurality of parallel lines of varying thickness, ~~characterized by the steps of~~ comprising:

a) capturing, by means of a reading device, a sequence of two-dimensional images of the bar code during moving of the reading device across the same;

b) detecting edges of the bar code in at least a subset of the images;

c) determining, for the edges of at least a subset of the detected images, possible displacements in relation to the edges of a preceding image;

d) determining the most probable sequence of displacements for the sequence of images in which edges have been detected, further comprising the step of determining error functions for at least a subset of the conceivable displacements relative to displacements of a preceding image;

e) reconstructing the bar code by means of said sequence of images and said most probable sequence of displacements;

said error function e_k is calculated as

$$e_k = \max[e_{k-1}, (v_k - v_{k-1})(a_k - a_{k-1})]$$

wherein

e_{k-1} = error function of the displacement of a pre-ceding image,

v_{k-1} = speed of the reading device when the preceding image was captured if the displacement of the preceding image is valid,

v_k = speed of the reading device when the image in question was captured if the displacement of the image in question is valid,

a_{k-1} = acceleration of the reading device when the preceding image was captured if the displacement of the preceding image is valid,

a_k = acceleration of the reading device when the image in question was captured if the displacement of the image in question is valid.

11. (Previously Presented) A method for recording a bar code as claimed in claim 9, in which for a last image in the image sequence the displacement relative to displacements of the preceding image, which has the lowest error function, is selected as the most probable displacement.

12. (Original) A method for recording a bar code as claimed in claim 11, in which for each image preceding the last image, the displacement with regard to the most probable displacement of the subsequent image, which has the lowest error function, is selected as the most probable displacement.

13. (Currently Amended) A reading device for recording a bar code, which consists of a plurality of parallel lines of varying thickness, ~~characterized in that~~ the reading device ~~comprises~~ comprising:

means for capturing a sequence of two-dimensional images, the sequence including a subset of images, each image of the subset including at least a portion of the bar code when moving the reading device across the same,

means for detecting the edges of the bar code in each image of the subset of images,

means for determining possible displacements from the detected edges of each image of the subset of images in relation to the detected edges of at least one other image of the subset of images,

means for determining the most probable sequence of displacements of each image of the subset of images in relation to at least one other image of the subset of images for the subset of images, and

means for reconstructing bar code data by means of said sequence of images and said most probable sequence of displacements.

14. (Original) A reading device for recording a bar code as claimed in claim 13, in which the reading device is included in a reading pen.

15. (Original) A reading device for recording a bar code as claimed in claim 13, in which the reading device is integrated in a mobile telephone.

16. (Currently Amended) A digital storage medium comprising a computer program for recording a bar code, which consists of a plurality of parallel lines of varying thickness, ~~characterized in that the program comprises~~ comprising instructions ~~for the steps of:~~

a) capturing by means of a reading device a sequence of two-dimensional images, the sequence including a subset of images, each image of the subset including at least a portion of the bar code when moving the reading device across the same;

b) detecting the edges of the bar code in each image of the subset of images;

c) determining from the detected edges of each image of the subset of images, possible displacements of the detected edges in relation to the detected edges of at least one other image of the subset of images;

d) determining the most probable sequence of displacements of each image of the subset of images in relation to at least one other image of the subset of images for the subset of images; and

e) reconstructing bar code data by means of said sequence of images and said most probable sequence of displacements.

17. (Canceled).

18. (Previously Presented) The method of recording a bar code as claimed in claim 1, wherein the bar code data is an image of the bar code.

19. (Previously Presented) The method of recording a bar code as claimed in claim 1, wherein the bar code data is information contents of the bar code.

20. (New) The method of claim 1, wherein the detected edges are determined from the parallel lines of varying thickness that represent information content.

21. (New) The method of claim 1, wherein at least two of the two-dimensional images have partially overlapping contents.

22. (New) The method of claim 1, wherein the most probable sequence of displacements is determined as the most probable sequence of a number of different possible sequences formed by

different combinations of displacements between the images in the subsequence.